



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
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D407-667-105MB
Job Sheet 189422



855

Part No: D407-667-105MB

Job Qty: 1 pcs

Part Name: Fwd Crosstube - High 407, Matte Black



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 1/24/19

Job Tracking No:

Due Date: 3/8/19

Created By: Jesse White

Type: SOLD

Description:

Note: DWG D407-667-145 REV.D / IIN-D206-667 REV.D IPP Rev:F 05.09.01Add holes for comp. w/ Bell Skids
KJ/JLM IPP Rev:G 08-05-16 chg QC6 to QC15 DD verf:EC IPP Rev:H 08-06-03 update per DSI9415
(ECN1198) DD verf:ec IPP Rev:I 08-07-14 add (scribe inside of tube) seq.6 DD verf:EC IPP Rev:J 08-07-28
update per (par 08-013) DD verf:EC IPP Rev K 09.01.06 ECN 08-562 EC verf:DD IPP REV:L 11.08.05 PER
ECN 11-615 DD VERF:EC IPP REV:M 12.08.20 DSI9628 revA (ECN12-631) DD VERF:JLM

Ship Via:

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time	
110	Packaging 1 - Pick Kit	1 pcs		3/8/19	0.00	0.00	Packaging 1 - 1		
							Packaging 1 - 2		
							Packaging 1 - 3		
							Packaging 1 - 4		
							Packaging 1 - 5		
							Packaging 1 - 6		
							Packaging 1 - 7		
							Packaging 1 - 8		
							Packaging 1 - 9		
							Packaging 1 - 10		
							Packaging 1 - 11		
							Packaging 1 - 12		
							Packaging 1 - 13		
							Packaging 1 - 14		
							Packaging 1 - 15		
							Packaging 1 - 16		
							Packaging 1 - 17		
							Packaging 1 - 18		
							Packaging 1 - 19		
							Packaging 1 - 20		
							Packaging 1 - 21		
							Packaging 1 - 22		
							Packaging 1 - 23		
							Packaging 1 - 24		GP 19-02-06
							Packaging 1 - 25		
							Packaging 1 - 26		
							Packaging 1 - 27		
							Packaging 1 - 28		

				Packaging 1 - 29	
				Packaging 1 - 30	
				Packaging 1 - 31	
				Packaging 1 - 32	
				Packaging 1 - 33	
				Packaging 1 - 34	
				Packaging 1 - 35	
				Packaging 1 - 36	
120	Crosstubes - Bend - 2 - B4B	1 pcs	3/8/19 3.77 2.50	Crosstubes - Bend - B4B	GP 19-02-06
130	QC 15	1 pcs	3/8/19 0.00 0.00	QC 15 - 12	
				QC 15 - 3	
				QC 15 - 38	
				QC 15 - 47	
				QC 15 - 49	
				QC 15 - 58	
				QC 15 - 9	90/ FEB 08 2019
140	Crosstubes - 2 - B4B	1 pcs	3/8/19 0.00 1.28	Crosstubes - 1 - B4B	
				Crosstubes - 2 - B4B	
				Crosstubes - 3 - B4B	GP 19-02-19
				Crosstubes - 4 - B4B	
				Crosstubes - 5 - B4B	
				Crosstubes - 6 - B4B	
150	Crosstubes - 3 - B4B	1 pcs	3/8/19 0.00 0.36	Crosstubes - 1 - B4B	
				Crosstubes - 2 - B4B	
				Crosstubes - 3 - B4B	GP 19-02-19
				Crosstubes - 4 - B4B	
				Crosstubes - 5 - B4B	
				Crosstubes - 6 - B4B	
160	QC 5	1 pcs	3/8/19 0.00 0.00	QC 5 - 10	
				QC 5 - 12	
				QC 5 - 17	
				QC 5 - 18	
				QC 5 - 19	
				QC 5 - 22	
				QC 5 - 24	
				QC 5 - 3	
				QC 5 - 38	
				QC 5 - 42	
				QC 5 - 43	
				QC 5 - 49	
				QC 5 - 51	
				QC 5 - 58	
				QC 5 - 68	DAS FEB 19 2019 68
				QC 5 - 9	9-89
				QC 5 - 50	
				QC 5 - 30	
170	QC 7	1 pcs	3/8/19 0.00 0.00	QC 7 - 10	
				QC 7 - 13	
				QC 7 - 14	
				QC 7 - 15	
				QC 7 - 17	
				QC 7 - 18	
				QC 7 - 19	
				QC 7 - 2	
				QC 7 - 28	
				QC 7 - 3	
				QC 7 - 30	
				QC 7 - 34	

				QC 7 - 36	
				QC 7 - 37	
				QC 7 - 38	
				QC 7 - 41	AR 19-2-19
				QC 7 - 47	
				QC 7 - 48	
				QC 7 - 51	
				QC 7 - 58	
				QC 7 - 59	
				QC 7 - 6	
				QC 7 - 60	
				QC 7 - 9	
				QC 7 - 68	
				QC 7 - 50	
				QC 7 - 67	
180	Outsource - 2 - NDT per QSI038	1 pcs	3/8/19	SKY002-VC	CC 19-02-19
190	Packaging 2-1 - Receive - B4B	1 pcs	3/8/19	0.00 0.00	
				Packaging 2 - 1 - B4B	
				Packaging 2 - 2 - B4B	
				Packaging 2 - 3 - B4B	
				Packaging 2 - 5 - B4B	FEB 21 2019
				Packaging 2 - 4 - B4B	
				Packaging 2 - 6 - B4B	
				Packaging 2 - 7 - B4B	
				Packaging 2 - 8 - B4B	
				Packaging 2 - 9 - B4B	
				Packaging 2 - 10 - B4B	
				Packaging 2 - 11 - B4B	
				Packaging 2 - 12 - B4B	
				Packaging 2 - 13 - B4B	
				Packaging 2 - 14 - B4B	
				Packaging 2 - 15 - B4B	
				Packaging 2 - 16 - B4B	
				Packaging 2 - 17 - B4B	
				Packaging 2 - 18 - B4B	
				Packaging 2 - 19 - B4B	
				Packaging 2 - 20 - B4B	
				Packaging 2 - 21 - B4B	
				Packaging 2 - 22 - B4B	
				Packaging 2 - 23 - B4B	
				Packaging 2 - 24 - B4B	
				Packaging 2 - 25 - B4B	
				Packaging 2 - 26 - B4B	
				Packaging 2 - 27 - B4B	
				Packaging 2 - 28 - B4B	
				Packaging 2 - 29 - B4B	
				Packaging 2 - 30 - B4B	
				Packaging 2 - 31 - B4B	
				Packaging 2 - 32 - B4B	
				Packaging 2 - 33 - B4B	
				Packaging 2 - 34 - B4B	
				Packaging 2 - 35 - B4B	
				Packaging 2 - 36 - B4B	
200	QC 6	1 pcs	3/8/19	0.00 0.00	
				QC 6 - 38	
				QC 6 - 42	
				QC 6 - 9	DAS
				QC 6 - 68	FEB 25 2019 68
				QC 6 - 61	9-89
210	Spray Paint - 2 - B4B	1	3/8/19	0.00 0.25	Spray Paint - 1 - B4B
					R.O. 19-2-23

				Spray Paint - 2 - B4B	
				Spray Paint - 3 - B4B	
				Spray Paint - 4 - B4B	
220 QC 14	1 pcs	3/8/19	0.00 0.00	QC 14 - 15	
				QC 14 - 2	
				QC 14 - 34	
				QC 14 - 38	
				QC 14 - 41	As 19-2-25
				QC 14 - 51	
				QC 14 - 58	
				QC 14 - 59	
				QC 14 - 9	
				QC 14 - 68	
230 Crosstubes - 4 - B4B	1 pcs	3/8/19	0.00 1.52	Crosstubes - 1 - B4B	
				Crosstubes - 2 - B4B	
				Crosstubes - 3 - B4B	
				Crosstubes - 4 - B4B	As 19-3-1
				Crosstubes - 5 - B4B	
				Crosstubes - 6 - B4B	
240 QC 5	1 pcs	3/8/19	0.00 0.00	QC 5 - 10	
				QC 5 - 12	
				QC 5 - 17	
				QC 5 - 18	
				QC 5 - 19	
				QC 5 - 22	
				QC 5 - 24	
				QC 5 - 3	
				QC 5 - 38	
				QC 5 - 42	
				QC 5 - 43	
				QC 5 - 49	
				QC 5 - 51	
				QC 5 - 58	
				QC 5 - 68	
				QC 5 - 9	
				QC 5 - 50	
				QC 5 - 30	
250 Packaging 1-1 - Pick Kit - B4B	1 pcs	3/8/19	0.00 0.00	Packaging 1 - 1 - B4B	
				Packaging 1 - 2 - B4B	
				Packaging 1 - 3 - B4B	
				Packaging 1 - 4 - B4B	
				Packaging 1 - 5 - B4B	
				Packaging 1 - 6 - B4B	
				Packaging 1 - 7 - B4B	
				Packaging 1 - 8 - B4B	
				Packaging 1 - 9 - B4B	
				Packaging 1 - 10 - B4B	
				Packaging 1 - 11 - B4B	
				Packaging 1 - 12 - B4B	
				Packaging 1 - 13 - B4B	
				Packaging 1 - 14 - B4B	
				Packaging 1 - 15 - B4B	
				Packaging 1 - 16 - B4B	
				Packaging 1 - 17 - B4B	
				Packaging 1 - 18 - B4B	
				Packaging 1 - 19 - B4B	
				Packaging 1 - 20 - B4B	
				Packaging 1 - 21 - B4B	
				Packaging 1 - 22 - B4B	
				Plex 1/28/19 3:47 PM Dart.Hadley.Shannon	

				Packaging 1 - 23 - B4B	
				Packaging 1 - 24 - B4B	
				Packaging 1 - 25 - B4B	
				Packaging 1 - 26 - B4B	
				Packaging 1 - 27 - B4B	
				Packaging 1 - 28 - B4B	
				Packaging 1 - 29 - B4B	
				Packaging 1 - 30 - B4B	
				Packaging 1 - 31 - B4B	
				Packaging 1 - 32 - B4B	
				Packaging 1 - 33 - B4B	
				Packaging 1 - 34 - B4B	
				Packaging 1 - 35 - B4B	
				Packaging 1 - 36 - B4B	
260 QC 4	1 pcs	3/8/19	0.00 0.00	QC 4 - 26	
				QC 4 - 28	
				QC 4 - 38	
				QC 4 - 42	
				QC 4 - 58	
				QC 4 - 6	
				QC 4 - 69	
				QC 4 - 9	
				QC 4 - 46	
				DC - 1 - B4B	
265 DC - 1 - B4B	1 pcs	3/8/19	0.00 0.00	DC - 2 - B4B	
				Packaging 3 - 1 - B4B	
270 Packaging 3-1 - Stock - B4B	1 pcs	3/8/19	0.00 0.00	Packaging 3 - 2 - B4B	
				Packaging 3 - 3 - B4B	
				Packaging 3 - 4 - B4B	
				Packaging 3 - 5 - B4B	
				Packaging 3 - 6 - B4B	
				Packaging 3 - 7 - B4B	
				Packaging 3 - 8 - B4B	
				Packaging 3 - 9 - B4B	
				Packaging 3 - 10 - B4B	
				Packaging 3 - 11 - B4B	
				Packaging 3 - 12 - B4B	
				Packaging 3 - 13 - B4B	
				Packaging 3 - 14 - B4B	
				Packaging 3 - 15 - B4B	
				Packaging 3 - 16 - B4B	
				Packaging 3 - 17 - B4B	
				Packaging 3 - 18 - B4B	
				Packaging 3 - 19 - B4B	
				Packaging 3 - 20 - B4B	
				Packaging 3 - 21 - B4B	
				Packaging 3 - 22 - B4B	
				Packaging 3 - 23 - B4B	
				Packaging 3 - 24 - B4B	
				Packaging 3 - 25 - B4B	
				Packaging 3 - 26 - B4B	
				Packaging 3 - 27 - B4B	
				Packaging 3 - 28 - B4B	
				Packaging 3 - 29 - B4B	
				Packaging 3 - 30 - B4B	
				Packaging 3 - 31 - B4B	
				Packaging 3 - 32 - B4B	
				Packaging 3 - 33 - B4B	
				Packaging 3 - 34 - B4B	

				Packaging 3 - 35 - B4B	
				Packaging 3 - 36 - B4B	DAS
280 QC 21 - FG	1	3/8/19	0.00 0.00	QC 21 - FG - 21	21 MAR 11 2019
	pcs			QC 21 - FG - 70	8-88
Part Op 110 - (Pick Kit) Descriptions: 120 - (CNC Alpha 160 Bender) Bend tube as per Dwg D407-667-145 using CNC bender program 407-fw 130 - (QC15- Crosstube Dimensional Check) 140 - (Crosstubes) ***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING***** , VERIFIED BY: ***** 1- Drill holes & ream using drill Jig DT8541 & DT8542 as per Dwg D407-667-145. Drill all (3) top holes. Holes facing inboard. 2- Drill Fwd rivet holes using drill Jig DT8787 fwd as per Dwg D407-667-145. 3- C'sink holes as per Dwg D407-667-145. Allow rivet to sit below surface to compensate for paint. 4- Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins .Drill ONLY 2 top holes ONLY plug most bottom holes to prevent accidental drilling. 5- Drill holes and ream using drill Jig DT8541 & DT8542 as per Dwg D407-667-145. Drill only the top (2) holes. 6- Drill Aft rivet holes using drill Jig DT8787 aft as per Dwg D407-667-145. 7- C'sink holes as per Dwg D407-667-145. Allow rivet to sit below surface to compensate for paint. 8- Scribe part # and batch # using vibrating stylus as per Dwg D407-667-145 9- *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-145 150 - (Crosstubes Chemical Conversion) ***IMMEDIATELY AFTER GRINDING*** 1- PRESSURE WASH X-TUBE INSIDE AND OUT 2- ALODINE AND ACID ETCH X-TUBE INSIDE AND OUT AS PER QSI005. 160 - (QC5- Inspect part completeness to step on W/O) 170 - (QC7-Inspect Chemical Conversion Coat) 180 - Outsource2 (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** OUTSIDE SERVICE -CROSSTUBES Liquid Penetrant Inspection as per QSI 038 Or Level 2 Attach copy of NDT results to work order 190 - (Receive & Inspect for Damage & Mat'l Certs) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Inspect for transit damage 200 - (QC6- All purchased or subcontracted products) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Inspect for damage & ensure results are as per Dwg D206-667-145 210 - (Spray Paint / NDT Room) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** ***MASK AREA UNDER CLAMP PRIOR TO PAINTING AS PER DWG*** 1-Prime inside and outside crosstube as per QSI 005 4.2.1 *****Let tube sit up right for 30mins before hanging***** P4500-P-23 Base Batch: 5143304 P4500-C-23 Catalyst Batch: 5143305 Start time: Finish: *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** 1-Paint outside crosstube with White Imron as per QSI 005 4.2 Imron 55U white paint Batch: 5131486 Imron 125S activator Batch: 5146085 Start: 19-6 220 - (QC14- Inspect Spray Paint) Then,Wrap in plastic bag to protect from scratches 230 - (Crosstubes) INSTALL GROUNDING CLAMP AND SEAL WITH SIKAFLEX AS PER DWG A/R SIKAFLEX BATCH: 1-Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg 2-Install supports with Proseal 890 per D407-667-145 and QSI 015 A/R Proseal 890 Batch: 5139976 EXP: 19-6 3-Install supports clamps Using Dt9565 as per Dwg D407-667-145 ,Torque to 80-100 IN-LBS. Start: 19-2-24 Finish: 19-2-27 4-Install nut plates as per Dwg D407-667-145. Touch-up rivet heads with Imron paint. 240 - (QC5- Inspect part completeness to step on W/O) ***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED FOR 72HOURS AS PER DWG.*** 250 - (Pick Kit) 260 - (QC4- 100% Inspect kits for completeness) 265 - (Document Control) Photocopy bluefile and create labels as per PPP D407-667-105 CHG005 270 - (Identify as per dwg & Stock Location:) Identify and pack for shipping as per PPP D407-667-105 Location : FG097 280 - (QC21- Final Inspection - Work Order Release)					

Job BOM				
Part / Item	Component Name	Quantity	Operation	Container
D407-667-105TRN	Crosstube Turning Detail	1 Ea (1 ea)	110-Packaging 1 - Pick Kit	
D2873-043	Nut Plate Assembly	2 Ea (2 ea)	230-Crosstubes - 4 - B4B	
D2873-045	Nut Plate Assembly	2 pcs (2 ea)	230-Crosstubes - 4 - B4B	
D2891-1	Support 2.25	2 pcs (2 ea)	230-Crosstubes - 4 - B4B	
D3595-063-395	Rubber Cushion 0.63" Wide X 3.95" Long	4 pcs (4 ea)	230-Crosstubes - 4 - B4B	
MS20601-AD4W10	Rivet	14 Ea (14 ea)	230-Crosstubes - 4 - B4B	
MS21920-20	Clamp	4 Ea (4 ea)	230-Crosstubes - 4 - B4B	
AN742D36	Plain Clamp Loop	2 Ea (2 ea)	230-Crosstubes - 4 - B4B	
MS21042-3	Nut use MS21042L3 per QSI 017	2 Ea (2 ea)	230-Crosstubes - 4 - B4B	
MS27039-1-08	Screw	2 Ea (2 ea)	230-Crosstubes - 4 - B4B	
MS9165-05	Bracket	2 Ea (2 ea)	230-Crosstubes - 4 - B4B	
NAS1149C0332R	Washer	4 Ea (4 ea)	230-Crosstubes - 4 - B4B	
AN5-10A	Bolt	10 Ea (10 ea)	250-Packaging 1-1 - Pick Kit - B4B	335705
AN5-30A	Bolt	4 Ea (4 ea)	250-Packaging 1-1 - Pick Kit - B4B	335705
AN5-32A	Bolt	4 Ea (4 ea)	250-Packaging 1-1 - Pick Kit - B4B	335705
MS21042L5	Nut	4 Ea (4 ea)	250-Packaging 1-1 - Pick Kit - B4B	335705
NAS1149D0563J	Washer	18 Ea (18 ea)	250-Packaging 1-1 - Pick Kit - B4B	335705

Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
110-Packaging 1 - Pick Kit	D407-667-105TRN	1	6	0
230-Crosstubes - 4 - B4B	AN742D36	2	39	0
	D2873-043 S133733	2	58	0
	D2873-045 S133728	2	32	0
	D2891-1 S077442	2	12	0
	D3595-063-395 S036031	4	91	0
	MS20601-AD4W10 S036031	14	302	0
	MS21042-3	2	221	0
	MS21920-20 S083554	4	143	0
	MS27039-1-08	2	507	0
	MS9165-05	2	25	0
	NAS1149C0332R	4	3,259	0
250-Packaging 1-1 - Pick Kit - B4B	AN5-10A	10	194	0
	AN5-30A	4	59	0
	AN5-32A	4	453	0
	MS21042L5	4	302	0
	NAS1149D0563J	18	1,019	0

Part Specifications				
Specifications could not be found.				



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

D407-667-105MB

Job Sheet 189422



Part No: D407-667-105MB

Job Qty: 1 ea

Part Name: Fwd Crosstube - High 407, Matte Black



Part Weight: 0 lbs

Status: New

Priority: Medium

Job Created: 1/24/19

Job Tracking No:

Due Date: 3/8/19

Created By: Jesse White

Type: SOLD

Description:

Note: DWG D407-667-145 REV.D / IIN-D206-667 REV.D IPP Rev:F 05.09.01Add holes for comp. w/ Bell Skids
KJ/JLM IPP Rev:G 08-05-16 chg QC6 to QC15 DD verf:EC IPP Rev:H 08-06-03 update per DSI9415
(ECN1198) DD verf:ec IPP Rev:I 08-07-14 add (scribe inside of tube) seq.6 DD verf:EC IPP Rev:J 08-07-28
update per (par 08-013) DD verf:EC IPP Rev K 09.01.06 ECN 08-562 EC verf:DD IPP REV:L 11.08.05 PER
ECN 11-615 DD VERF:EC IPP REV:M 12.08.20 DSI9628 revA (ECN12-631) DD VERF:JLM

Ship Via:

Bill of Materials

https://www.plexonline.com/868fb0bf-82b9-49f2-9c9e-7169c1573844/Plexus_Control/Report_Viewer_2.asp?URL=../Part/Job_Sheet.asp&Report=True... 1/3

Job Routing								
Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier	
					Setup Hrs	Run Hrs	Workcenter / Supplier	Lead Time
90	Start up Operation	1 Ea		3/8/19	0.00	0.00	Start Up Stores/Pkg-1	
110	Packaging	1 pcs		3/8/19	0.00	0.00	Packaging1-4	
120	CNC Bend Crosstubes	1 pcs		3/8/19	3.77	2.50	CNC Bend Crosstube	
130	QC	1 pcs		3/8/19	0.00	0.00	QC15	
140	Crosstubes	1 pcs		3/8/19	0.00	1.28	Crosstubes-2	
150	HandFXtube	1 pcs		3/8/19	0.00	0.36	HandFinish5	
160	QC	1 pcs		3/8/19	0.00	0.00	QC5	
170	QC	1 pcs		3/8/19	0.00	0.00	QC7-3	
180	Outsource	1 pcs		3/8/19			SKY002-VC	
190	Packaging	1 pcs		3/8/19	0.00	0.00	Packaging2	
200	QC	1 pcs		3/8/19	0.00	0.00	QC6	
210	SprayPaint	1 pcs		3/8/19	0.00	0.25	Spray Paint	
220	QC	1 pcs		3/8/19	0.00	0.00	QC14	
230	Crosstubes	1 pcs		3/8/19	0.00	1.52	Crosstubes-2	
240	QC	1 pcs		3/8/19	0.00	0.00	QC5	
250	Packaging	1 pcs		3/8/19	0.00	0.00	Packaging1-4	
260	QC	1 pcs		3/8/19	0.00	0.00	QC4	
265	DC	1 pcs		3/8/19	0.00	0.00	DC	
270	Packaging	1 pcs		3/8/19	0.00	0.00	Packaging3-2	
280	QC21-FG	1 Ea		3/8/19	0.00	0.00	QC21	

Part Op 120 - Bend tube as per Dwg D407-667-145 using CNC bender program 407-fw

Descriptions: 140 - ***** ENSURE PROPER JIG POSITIONING BEFORE DRILLING***** , VERIFIED BY: ***** 1- Drill holes & ream using drill Jig DT8541 & DT8542 as per Dwg D407-667-145. Drill all (3) top holes. Holes facing inboard. 2- Drill Fwd rivet holes using drill Jig DT8787 fwd as per Dwg D407-667-145. 3- C'sink holes as per Dwg D407-667-145. Allow rivet to sit below surface to compensate for paint. 4- Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins .Drill ONLY 2 top holes ONLY plug most bottom holes to prevent accidental drilling. 5- Drill holes and ream using drill Jig DT8541 & DT8542 as per Dwg D407-667-145. Drill only the top (2) holes. 6- Drill Aft rivet holes using drill Jig DT8787 aft as per Dwg D407-667-145. 7- C'sink holes as per Dwg D407-667-145. Allow rivet to sit below surface to compensate for paint. 8- Scribe part # and batch # using vibrating stylus as per Dwg D407-667-145 9- *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D407-667-145

150 - ***IMMEDIATELY AFTER GRINDING***

180 - *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** OUTSIDE SERVICE -CROSSTUBES Liquid Penetrant Inspection as per QSI 038 Or Level 2 Attach copy of NDT results to work order

190 - *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Inspect for transit damage

200 - *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Inspect for damage & ensure results are as per Dwg D206-667-145

210 - *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** **MASK AREA UNDER CLAMP PRIOR TO PAINTING AS PER DWG*** 1-Prime inside and outside crosstube as per QSI 005 4.2.1 *****Let tube sit up right for 30mins before hanging***** P4500-P-23 Base Batch: P4500-C-23 Catalist Batch: Start time: Finish: *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** 1-Paint outside crosstube with White Imron as per QSI 005 4.2 Imron 55U white paint Batch: Imron 125S activator Batch: Start:

220 - Then,Wrap in plastic bag to protect from scratches

230 - INSTALL GROUNDING CLAMP AND SEAL WITH SIKAFLEX AS PER DWG A/R SIKAFLEX BATCH: 1-Abrade mating surfaces of support and crosstube with 180 grit sandpaper, clean the area with MEK or equivalent as per dwg 2-Install supports with Proseal 890 per D407-667-145 and QSI 015 A/R Proseal 890 Batch: EXP: 3-Install supports clamps Using Dt9565 as per Dwg D407-667-145 ,Torque to 80-100 IN-LBS. Start: Finish: 4-Install nut plates as per Dwg D407-667-145. Touch-up rivet heads with Imron paint.

240 - ***RE-CHECK TORCQUE ON CLAMP AFTER PROSEAL HAS CURED FOR 72HOURS AS PER DWG.***

265 - Photocopy bluefile and create labels as per PPP D407-667-105 CHG005

270 - Identify and pack for shipping as per PPP D407-667-105 Location : FG097

Job BOM				
Part / Item	Component Name	Quantity	Operation	Container
D407-667-105TRN	Crosstube Turning Detail	1 Ea (1 ea)	90-Start up Operation	
D2873-043	Nut Plate Assembly	2 Ea (2 ea)	230-Crosstubes	
D2873-045	Nut Plate Assembly	2 pcs (2 ea)	230-Crosstubes	
D2891-1	Support 2.25	2 pcs (2 ea)	230-Crosstubes	
D3595-063-395	Rubber Cushion 0.63" Wide X 3.95" Long	4 pcs (4 ea)	230-Crosstubes	
MS20601-AD4W10	Rivet	14 Ea (14 ea)	230-Crosstubes	
MS21920-20	Clamp	4 Ea (4 ea)	230-Crosstubes	
AN742D36	Plain Clamp Loop	2 Ea (2 ea)	230-Crosstubes	
MS21042-3	Nut use MS21042L3 per QSI 017	2 Ea (2 ea)	230-Crosstubes	
MS27039-1-08	Screw	2 Ea (2 ea)	230-Crosstubes	
MS9165-05	Bracket	2 Ea (2 ea)	230-Crosstubes	
NAS1149C0332R	Washer	4 Ea (4 ea)	230-Crosstubes	
AN5-10A	Bolt	10 Ea (10 ea)	250-Packaging	
AN5-30A	Bolt	4 Ea (4 ea)	250-Packaging	
AN5-32A	Bolt	4 Ea (4 ea)	250-Packaging	
MS21042L5	Nut	4 Ea (4 ea)	250-Packaging	
NAS1149D0563J	Washer	18 Ea (18 ea)	250-Packaging	

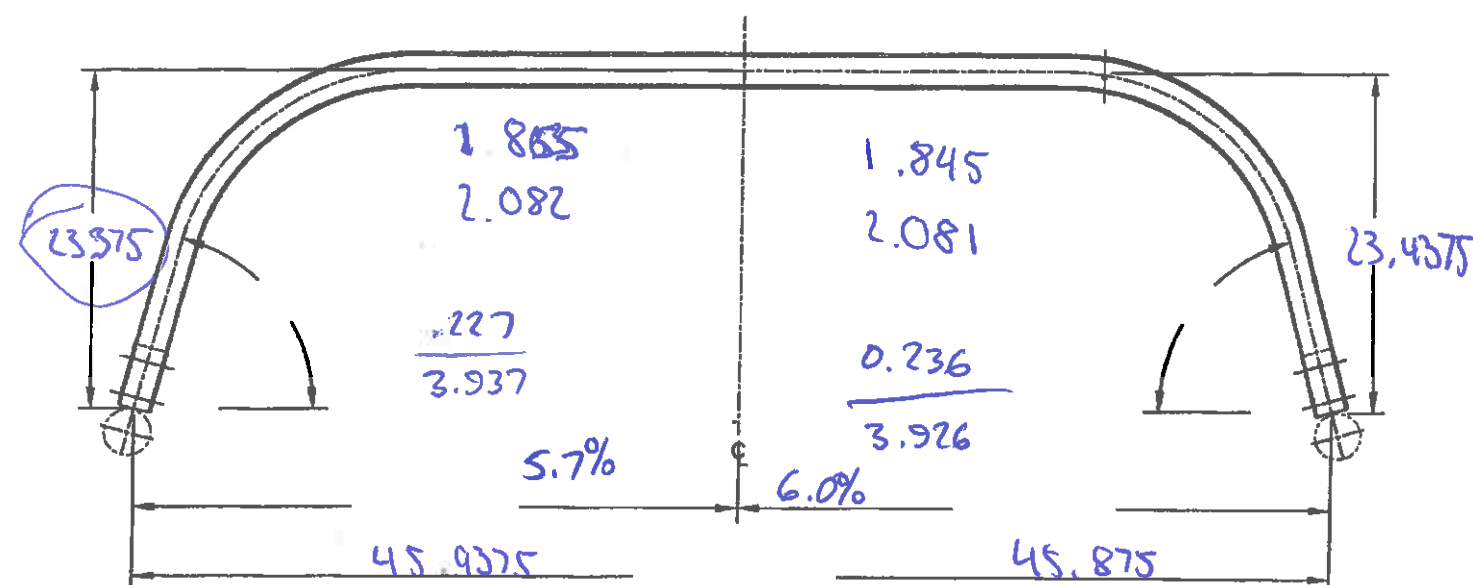
Job Allocations				
Operation	Component Part	Required	Inventory	Allocated
90-Start up Operation 230-Crosstubes	D407-667-105TRN	1	6	0
	AN742D36	2	39	0
	D2873-043	2	58	0
	D2873-045	2	32	0
	D2891-1	2	12	0
	D3595-063-395	4	91	0
	MS20601-AD4W10	14	302	0
	MS21042-3	2	221	0
	MS21920-20	4	143	0
	MS27039-1-08	2	507	0
	MS9165-05	2	25	0
	NAS1149C0332R	4	3,307	0
	AN5-10A	10	194	0
	AN5-30A	4	59	0
	AN5-32A	4	453	0
	MS21042L5	4	318	0
250-Packaging	NAS1149D0563J	18	1,027	0

Part Specifications

Specifications could not be found.

DART AEROSPACE LTD		Work Order:	
Description: Crosstube High Fwd (407)		Part Number:	D407-667-105
Inspection Dwg: D407-667-145 Rev: C		Page 1 of 1	

Required Dimension	Min	Max
Height	23.41	23.67
1/2 Span	45.81	46.07
Angle	54	56
Total Span	91.62	92.14
Bending Passes	6	--
Crushing	--	6%



	Side A	Side B
Bending Passes	14	17
Crushing		
Comments		

QC15 Inspection	
Date	

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.11.12	Dimensions updated per Dwg Rev C	KJ	
C	12.04.16	Added bending, crushing dimensions	KJ	
D	12.10.30	Revised Total Span dimensions & Dwg Rev	KJ	

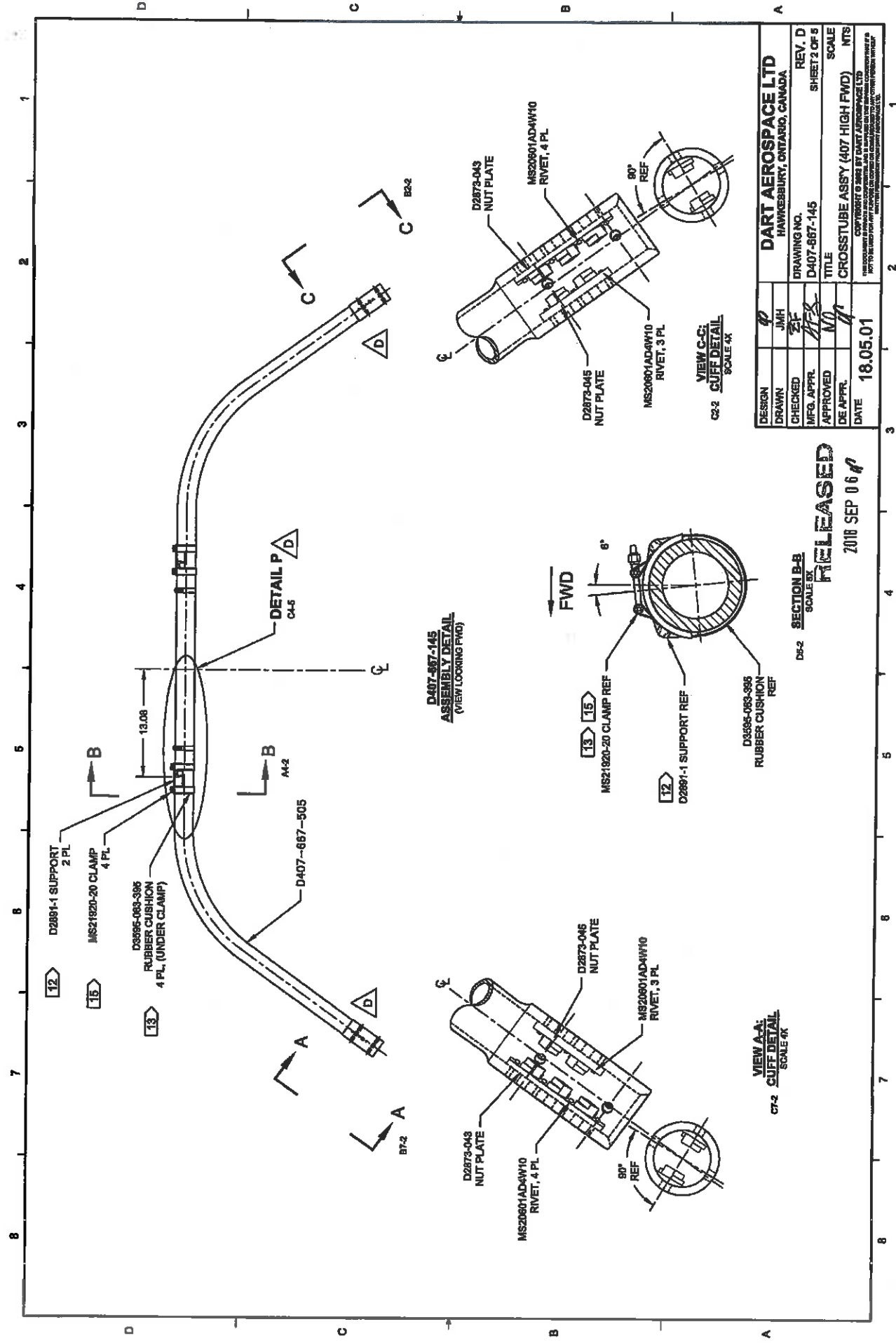
Item	Qty -145	Part Number	Description
1	X	D407-667-145	CROSSTUBE ASSEMBLY (407 HIGH FWD)
2	1	D6010-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-083-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20801AD4W10	RIVET (OR NAS9302B-4-10)
9	A/R	PROSEAL 880 B-2	SEALANT, AMS-S-8802 CLASS B-2
10	2	AN742D36	CLAMP
11	2	MS8185-05	ANGLE BRACKET
12	2	MS21042L3	NUT (OR MS21042-3)
13	2	MS27039-1-08	SCREW
14	4	NAS1146C0332R	WASHER (OR AN680C10L)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6010-115
FINISHED LENGTH = 113.2040.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 016 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D407-667-145" AND BATCH NUMBER ON INSIDE OF CURF USING VIBRATING STYLUS.
- 7) WEIGHT: 17.8 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 6 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038
- 12) TO INSTALL D2891-1 SUPPORT: ABRASIVE MATING SURFACE OF SUPPORT AND CROSSTUBE 0.04" TO 0.07" THICK LAYER OF PROSEAL 880 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-083-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.6 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 880 SEALANT HAS CURED FOR 72 HOURS.
- 16) MASK AREA UNDER CLAMP PRIOR TO PAINTING.
- 17) SEAL EDGES WHERE AN742D36 CLAMP MEETS WITH THE CROSSTUBE USING SIKAFLEX-241/-281 OR MIL-S-8802 CLASS B2 OR PROSEAL 880 SEALANT.
- 18) PERFORM RESISTANCE CHECK TO ENSURE MAX RESISTANCE IS 10 MILLION LBS.

D	REVISE SHEET 2 ASSEMBLY DETAIL HOLE PATTERN PER CAR18-224. UPDATE PARTS LIST AND GENERAL NOTES 12 & 13 TO INCORPORATE DEO C-1. ADD ITEMS 10-14 TO PARTS LIST. ADD GENERAL NOTES 18-19 AND ADD SHEET 5 TO INCORPORATE DEO C-2.	JMH	18.05.01
C	REVISE GENERAL NOTES/PART LIST (ZN D7-1): TO CORRECT DIMENSIONS. D2891-1 SUPPORT: 0.04" TO 0.07" THICK LAYER OF PROSEAL 880 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT. REMOVED REF. 7 AND TOOL BRACKETS (OR QSI 043, D2891-1) RELOCATED FLAG (OR QSI 045) PER PART LIST. MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.08
B	ADD HOLES AND NUT PLATES FOR COMPATIBILITY WITH BHT1AA SKIDTUBES	PH	05.07.26
A	NEW ISSUE	CP	02.05.08
REV.	DESCRIPTION	BY	DATE
DESIGN	JF	JMH	
DRAWN			
CHECKED	ZF		
MFG. APPR.	AFZ		
APPROVED	MD		
DE APPR.			
DATE	18.05.01		
DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		REV. D SHEET 1 OF 5 SCALE	
CROSSTUBE ASSY (407 HIGH FWD)		NTS	
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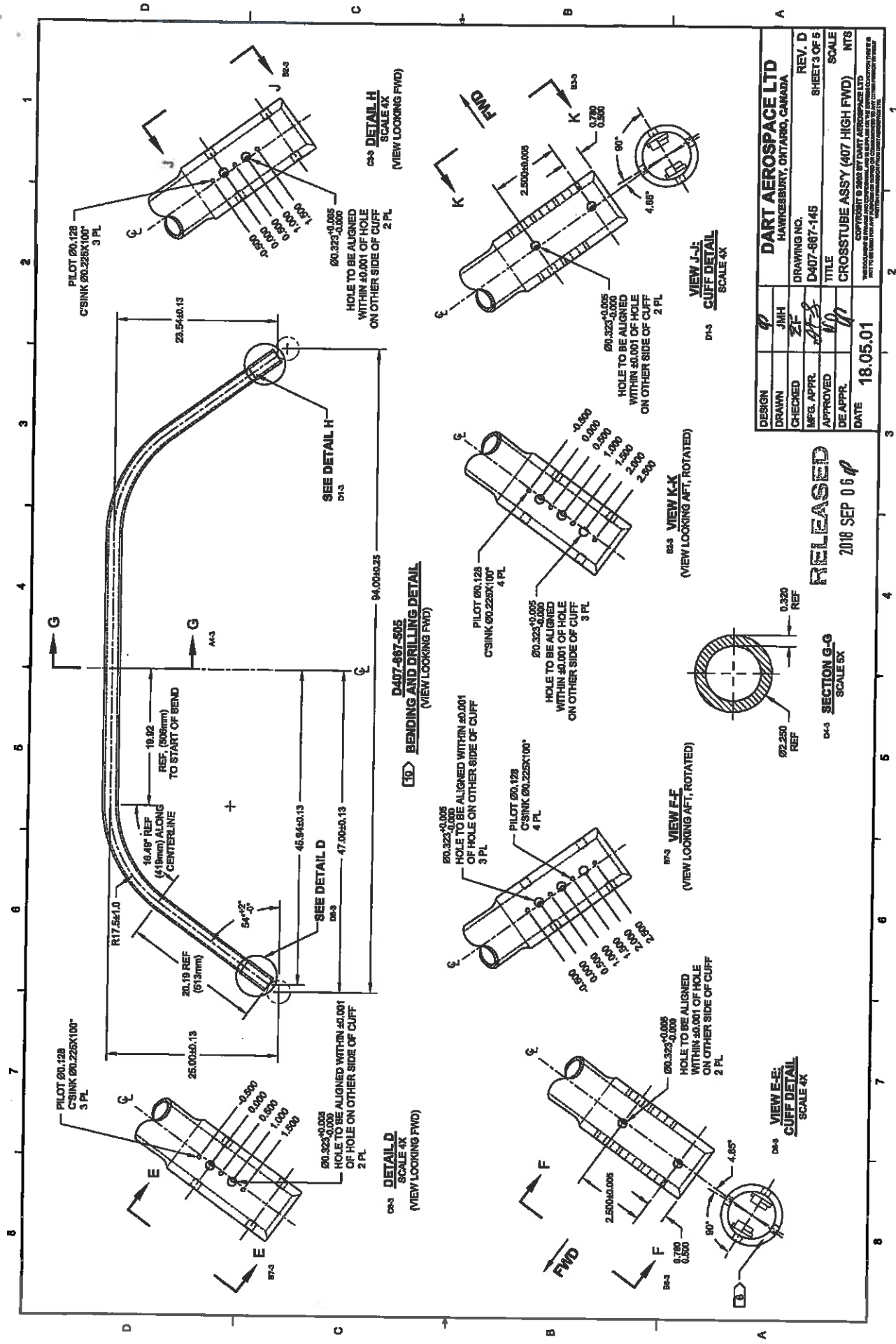
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2018 SEP 06
EJN18-117

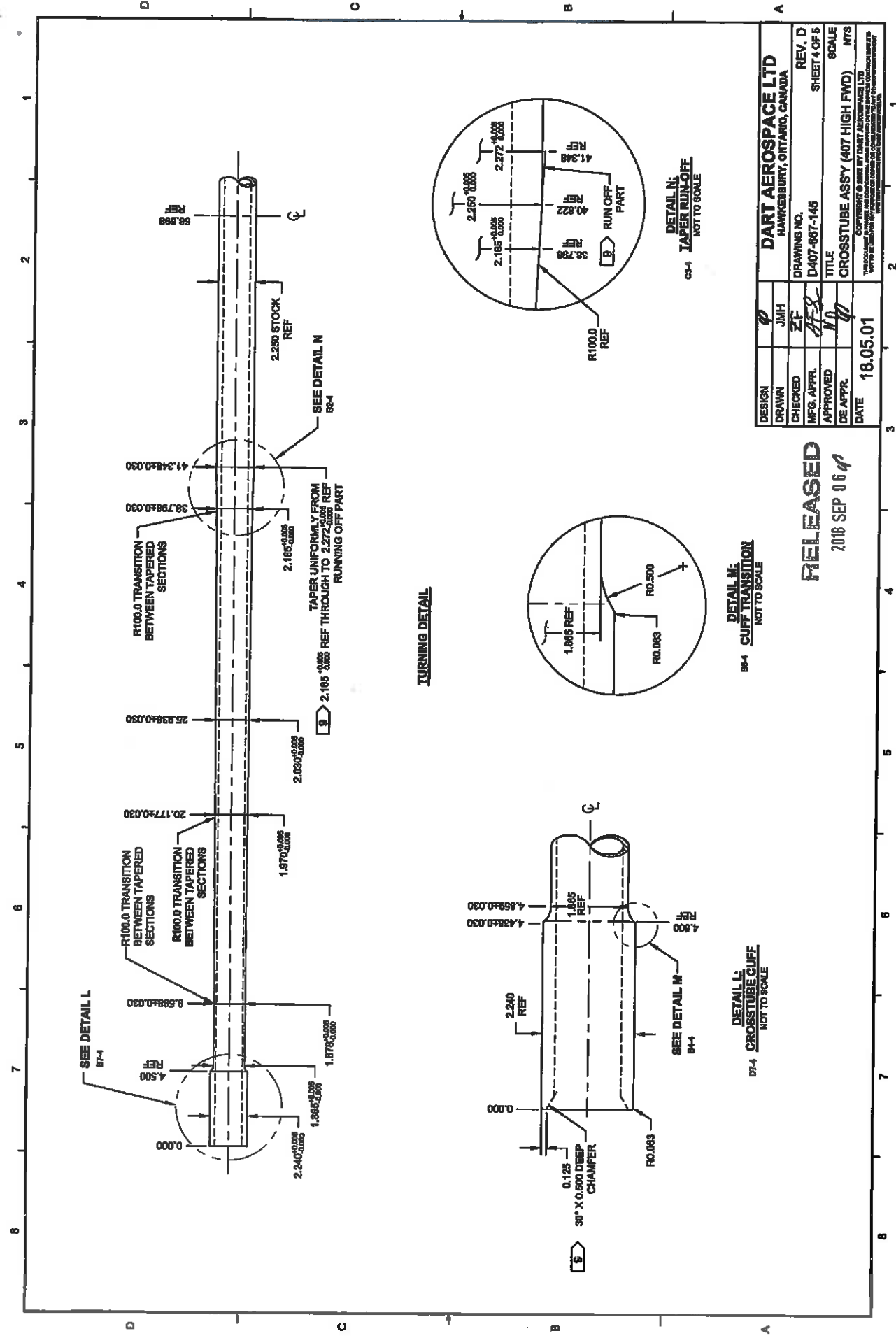


SEASIDE

2018 SEP 06 AM

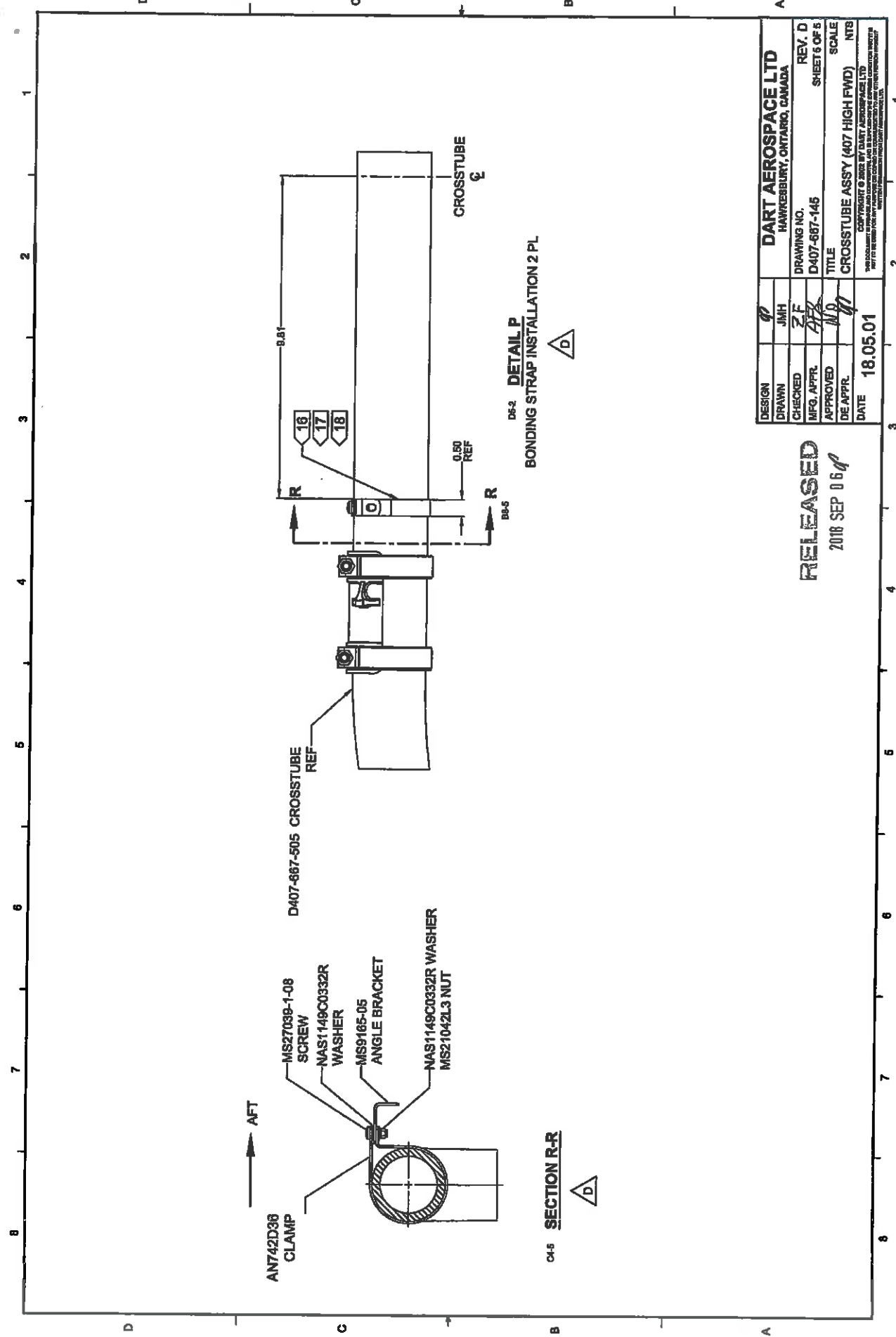
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RELEASED

2018 SEP 06 *sp*



DESIGN	q	DART AEROSPACE LTD
DRAWN	JMH	HAWKEBURY, ONTARIO, CANADA
CHECKED	ZF	DRAWING NO.
MFG. APPR.	ZF	D407-687-145
APPROVED	MD	TITLE
DE APPR.	q	CROSSTUBE ASSY (407 HIGH FWD)
DATE	18.05.01	SCALE
		NTS

CONFIDENTIAL & UNCLASSIFIED BY DART AEROSPACE LTD
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SEE THE REMOVAL OF CONFIDENTIALITY AND UNCLASSIFICATION OF THIS DOCUMENT
SEE THE REMOVAL OF CONFIDENTIALITY AND UNCLASSIFICATION OF THIS DOCUMENT

Entered:

Date:

and
20 jan 2019

WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

NCR No. 19-7226

Route update only



Job: 189422		DISPOSITION		DEPARTMENT/PROCESS				Route update only			
Part No. D467-667-105		Rework Scrap Use-as-is ☒		Skid-tube Machining Large Fab		Cross tube Small Fab Finishing		Eng. (Non-AW) Prod. Eng. Coord. Rec/Store/Packaging		Engineering Water Jet Supplier Quality	
Date: 15/2/17		Sequence #: 160		QTY Affected: 1		MRB (QS1042)		15SP 15/2/17			
Description Work Order Deviation				Disposition							
One side is under-bent, -0.17 under nominal.				Acceptable. Tube is even end not beyond that which will cause fit issues							
Root Cause				Completed By: 15/2/17							
Operator ☒ Manufacturing Process ☒ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐				Lead hand / Supervisor							
QC / QA Coordinator: DAS 68				FEB 08 2019							
Fault Category				Positioned Wrong Outside Tolerance Drawing Finish Part Lost/Missing Misread							
Pressure/Forced Bending Crushing Cracks Crimp/Kink/Ripple/Wave/Twist Marks/Chatter Mislabeled Other/Details:				Power Loss/Surge Folio/Program Grain Direction Weld Wrong Stock Pulled Out of Sequence Off-set/Set-up							
Contamination Misaligned/off center BOM/Route Broken/Damage/Defect Incomplete/Unclear Instructions Drill Holes Fit/Function				Fault Category							



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO042630



Supplier: SKY002-VC
Skyservice
6120 Midfield Road
Mississauga
ON
L5P 1B1 Canada
Phone: 905-678-5636
Fax: 905-678-5841

PO No: PO042630

PO Date: 2/19/19

Due Date: 2/21/19

Purchase Order

Revision:

Revision Date:

Ship-To Contact: Tsimiklis, ChrisoulaPhone:

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground

Pymt Terms: Net 30

Freight Terms:

Special Comments:

Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	187761-A	D4884-1	End Fitting, Eye : Various STC's (Outsource process - NDT per QSI038 4.1)ISSUE P/O	Firmed	-	2/21/19	4 pcs	0 pcs	4 pcs	\$98.50/pcs	\$394.00
2	186474	D206-667-207BL	Aft Crosstube - Mid Height 206L / L1 / L3 / L4, Blue : TC STC SH01-5 Issue 3, FAA STC SR01304NY 05/12/15, JCAB JAPAN STC- 32-OSA 02/02/28, EASA STC EASA.IM.R.S.01179 06/07/03, BRAZIL 2009S08- 16 09/08/25, BRAZIL 2009S08-17 09/08/25 Outsource process - NDT per QSI038 4.1 *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 038Or Issue P/O: _____ LPI as per ASTM 1417 Level 2 Attach copy of NDT results to work order	Firmed	-	2/21/19	1 pcs	0 pcs	1 pcs	\$98.50/pcs	\$98.50
	189820			Firmed	-	2/21/19	1 pcs	0 pcs	1 pcs	\$98.50/pcs	\$98.50
Sub Total:							2	0	2		\$197.00



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
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PURCHASE ORDER PO042630



Items

Line Item	Job	Part	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
3	189425	D407-667-205MB	Aft Crosstube - High 407, Matte Black : TC STC SH01-5 Issue 3, FAA STC SR01304NY 05/12/15, JCAB JAPAN STC-32-OSA 02/02/28, EASA STC EASA.IM.R.S.01179 06/07/03, BRAZIL 2009S08-16 09/08/25, BRAZIL 2009S08-17 09/08/25 *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** Liquid Penetrant Inspection as per QSI 0380	Firmed	-	2/21/19	1 pcs	0 pcs	1 pcs	\$98.50/pcs	\$98.50
	190372			Firmed	-	2/21/19	1 pcs	0 pcs	1 pcs	\$98.50/pcs	\$98.50
1 X FEB 21 2019							Sub Total:	2	0	2	\$197.00
4	189422	D407-667-105MB	Fwd Crosstube - High 407, Matte Black : TC STC SH01-5 Issue 3, FAA STC SR01304NY 05/12/15, JCAB JAPAN STC-32-OSA 02/02/28, EASA STC EASA.IM.R.S.01179 06/07/03, BRAZIL 2009S08-16 09/08/25, BRAZIL 2009S08-17 09/08/25 Outsource2 (Outsource process - NDT per QSI038 4.1) *** WEAR LATEX GLOVES WHEN HANDLING CROSSTUBE*** OUTSIDE SERVICE -CROSSTUBES Liquid Penetrant Inspection as per QSI 038 Or Level 2 Attach copy of NDT results to work order	Firmed	-	2/21/19	1 pcs	0 pcs	1 pcs	\$98.50/pcs	\$98.50
	189423			Firmed	-	2/21/19	1 pcs	0 pcs	1 pcs	\$98.50/pcs	\$98.50
1 X FEB 21 2019							Sub Total:	2	0	2	\$197.00
Grand Total:										\$985.00	



Dart Aerospace Ltd.
1270 Aberdeen St
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K6A 1K7
Canada

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PURCHASE ORDER
PO042630



Order Notes

Procurement Quality Clauses

- A005 right of entry
- A012 chemical and physical test report
- A016 personnel qualification
- A017 raw material identification (as applicable)

- A022 Apical Processing
- A024 process certifications
- A026 certification of material conformance

- A041 quality management system
- A042 dart notification by supplier
- A043 retention of quality documents

A048 counterfeit parts avoidance, detection, mitigation and disposition program

A049 supplier awareness

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

 Work Order Traveler Sky Service F.B.O. Inc.		TCCA AMO 53-89 / EASA 145.7142 / BDA AMO 385	
10105 Ryan Avenue, Dorval, Quebec, H9P 1A2			
WO#: MWO39367	Customer: Dart Aerospace Ltd.	Dept: NDT YUL	Reference: PO042630
Descr:	PN:	S/N:	Qty: 1
Make:	Model:	Reg:	A/C S/N:
TSN:	CSN:	TSO:	
Task: UNSCHEDULED			Sequence: 1

Work Required:

CARRY OUT NDT (LIQUID PENETRANT CRACK TEST) ON THE FOLLOWING 6 CROSSTUBES and 4 END FITTINGS EYE:

P/N: D4884-1 END FITTINGS JOB SHEET#187761-A (4 ea)

P/N: D407-667-105MB FWD CROSSTUBE-HIGH 407
1- JOB SHEET# 189422 2- JOB SHEET# 189423

P/N: D407-667-205MB AFT CROSSTUBE-HIGH 407
3- JOB SHEET# 189425 4- JOB SHEET# 190372

P/N: D206-667-207BL AFT CROSSTUBE
5- JOB SHEET# 186474 6- JOB SHEET# 189820

DAS
68
9-89

Action Taken:		Date:	Initial/Stamp:
LIQUID PENETRANT INSPECTION CARRIED OUT ON ITEMS LISTED ABOVE AS PER ASTM1417M-16 -NO CRACK FOUND. PEN.(ZL-56, MPO13600), DEV.(SKD-S2, MPO11715), CLEANER(SKC-S, MPO MPO19368)		19 FEB 2019	 
Description	Location P/N	Qty	Batch S/N Off S/N On

I certified that the maintenance described above has been performed in accordance with the applicable standard of airworthiness.

Signature: 	ACA/SCA Stamp	Date: 19 FEB 2019
Name: CHRISTIAN BRIEN		

Change Record

PAGE 1 OF 1

Part Number: D407-667-105

Description: CROSSTUBE INSTALLATION, 407 HIGH FWD

[illegible]